Docket No.: SON-3163
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Tomiji Tanaka et al.

Application No.: 10/579,903

Confirmation No.: 6919

Filed: May 19, 2006

Art Unit: 2828

For: EXTERNAL CAVITY TYPE SEMICONDUCTOR LASER

Examiner: Michael W. Carter

APPEAL BRIEF

MS Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

This is an Appeal Brief under 37 C.F.R. § 41.37 appealing the Final Office Action of the Examiner dated June 4, 2008. This Brief is also in furtherance of the Notice of Appeal previously filed on November 18, 2008, along with a Request for Pre-Appeal Brief Panel Review. A Panel Decision dated February 5, 2009, allowed this matter to proceed to the Board of Patent Appeals and Interferences.

Because April 5, 2009, the first extended month under 37 C.F.R. §§ 41.37(a) and 1.136(a), falls on a Sunday, the period for response is extended to April 6, 2009, which is the next day that is neither a Saturday, Sunday nor a Federal holiday in the District of Columbia. See 37 C.F.R. § 1.7.

This brief contains items under the following headings as required by 37 C.F.R. § 41.37 and M.P.E.P. § 1206:

I. Real Party In Interest
II. Related Appeals, Interferences, and Judicial Proceedings
III. Status of Claims
IV. Status of Amendments
V. Summary of Claimed Subject Matter
VI. Grounds of Rejection to be Reviewed on Appeal
VII. Argument
VIII. Claims
IX. Evidence
X. Related Proceedings
XI. Conclusion

Appendix A Claims
Appendix B Additional Evidence (none)
Appendix C Related Proceedings (none)

I. REAL PARTY IN INTEREST

The real party in interest for this appeal is Sony Corporation, of Tokyo, Japan. An assignment of all rights in the present application to Sony Corporation was executed by the inventors and recorded by the United States Patent and Trademark Office at Reel 018587, Frame 0730.

II. RELATED APPEALS, INTERFERENCES, AND JUDICIAL PROCEEDINGS

There are no other appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

III. STATUS OF CLAIMS

III.A. Current Status of Claims

A complete listing of the claims with corresponding status is provided as follows:

Claims 1-18. (Rejected).

III.B. Claims On Appeal

Appellant hereby appeals the final rejection of claims 1-18.

IV. STATUS OF AMENDMENTS

A Non-Final Office Action rejecting claims 1-18 was mailed on November 16, 2007, and an Amendment responsive thereto was filed on February 19, 2008, amending claims 1 and 13. A Final Office Action rejecting the pending claims was mailed June 4, 2008. The Final Office Action repeated the same grounds of rejection as the Non-final Office Action, with a section responding to arguments. Request for Reconsideration was then filed on July 29, 2008. Following an Advisory Action mailed on September 18, 2008, maintaining the rejection of the claims in the Final Office Action, a Notice of Appeal and Request for Pre-Appeal Brief Panel Review was filed on November 18, 2008. A Decision on Panel Review dated February 5, 2009, allowed the matter to proceed to the Board of Patent Appeals and Interferences.

V. SUMMARY OF CLAIMED SUBJECT MATTER

The following description is for illustrative purposes and is not intended to limit the scope of the invention.

Independent claim 1 recites: An external cavity type semiconductor laser, comprising (e.g., Clean Substitute Specification (hereinafter "Spec."), pg. 5, lines 23-24; pg. 6, line 25 – pg. 7, line 1; pg. 9, lines 20 – pg. 10, line 7; pg. 13, lines 7-13 ; FIGS. 1, 7A, 7B, 8A and 8B):

a semiconductor laser device having a plurality of layers including an activation layer (Spec., pg. 5, line 24 – pg. 6, line 1; pg. 7, lines 1-3; pg. 10, lines 2-3; pg. 13, line 4 – pg. 14, line 8; FIGS. 1, 7A, 7B, 8A and 8B);

a window glass disposed opposite to a beam emission surface of the semiconductor laser device (Spec., pg. 6, lines 1-2; pg. 7, lines 3-4; pg. 14, lines 8-16; FIGS. 7A, 7B, 8A and 8B);

a grating that receives a beam emitted from the semiconductor laser device through the window glass and returns a beam having a predetermined wavelength to the semiconductor laser device (Spec., pg. 6, lines 3-6; pg. 7, lines 4-7; pg. 10, lines 2-3; FIGS. 1, 7A and 8A); and

a lens disposed between the semiconductor laser device and the grating and which collects the beam emitted from the semiconductor laser device (Spec., pg. 6, lines 6-9; pg. 7, lines 7-9; pg. 10, lines 2-3; FIGS. 1, 7B and 8B),

wherein the window glass is arranged in a first state or a second state (Spec., pg. 6, lines 9-10; pg. 7, lines 10-11; pg. 14 line 17 – pg. 15, line 3; pg. 16, line 19 – pg. 17, line 12; FIGS. 7B and 8B),

wherein in the first state the window glass is nearly in parallel with a first axis and is not in parallel with a second axis (Spec., pg. 6, lines 10-21; pg. 7; pg. 14, lines 11-21, line 19 – pg. 17, line 12; FIG. 8B),

wherein in the second state the window glass is not in parallel with the first axis, the window glass being nearly in parallel with the second axis (Spec., pg. 6, lines 21-24; pg. 7, lines 11-21; pg. 15, lines 4-11; FIG. 7B), and

wherein the first axis is nearly perpendicular to a surface that is in parallel with at least one of the boundary surfaces of the activation layer and other layers of the semiconductor laser device, and the second axis is nearly in parallel with the beam emission surface of the semiconductor laser device and nearly perpendicular to the first axis (Spec., pg. 6, lines 10-24; pg. 7, lines 11-24; pg. 14 line 17 – pg. 15, line 3; pg. 16, line 19 – pg. 17, line 12; FIGS. 7B and 8B).

Independent claim 13 recites: An external cavity type semiconductor laser, comprising (Spec., pg. 5, lines 23-24; pg. 6, line 25 – pg. 7, line 1; pg. 9, lines 20 – pg. 10, line 7; pg. 13, lines 7-13 ; FIGS. 1, 7A, 7B, 8A and 8B):

a laser diode having a plurality of layers including an activation layer (Spec., pg. 5, line 24 – pg. 6, line 1; pg. 7, lines 1-3; pg. 10, lines 2-3; pg. 13, line 4 – pg. 14, line 8; FIGS. 1, 7A, 7B, 8A and 8B);

a window glass disposed opposite to a beam emission surface of the laser diode (Spec., pg. 6, lines 1-2; pg. 7, lines 3-4; pg. 14, lines 8-16; FIGS. 7A, 7B, 8A and 8B);

a grating that receives a beam emitted from the laser diode through the window glass and returns a beam having a predetermined wavelength to the laser diode (Spec., pg. 6, lines 3-6; pg. 7, lines 4-7; pg. 10, lines 2-3; FIGS. 1, 7A and 8A); and

a lens disposed between the laser diode and the grating and collects the beam emitted from the laser diode (Spec., pg. 6, lines 6-9; pg. 7, lines 7-9; pg. 10, lines 2-3; FIGS. 1, 7B and 8B),

wherein the window glass is arranged in a first state or a second state (Spec., pg. 6, lines 9-10; pg. 7, lines 10-11; pg. 14 line 17 – pg. 15, line 3; pg. 16, line 19 – pg. 17, line 12; FIGS. 7B and 8B),

wherein in the first state the window glass is nearly in parallel with a first axis and is not in parallel with a second axis (Spec., pg. 6, lines 10-21; pg. 7; pg. 14, lines 11-21, line 19 – pg. 17, line 12; FIG. 8B),

wherein in the second state the window glass is not in parallel with the first axis, the window glass being nearly in parallel with the second axis (Spec., pg. 6, lines 21-24; pg. 7, lines 11-21; pg. 15, lines 4-11; FIG. 7B),

wherein the first axis is nearly perpendicular to a surface that is in parallel with at least one of the boundary surfaces of the activation layer and other layers of the semiconductor laser device, and the second axis is nearly in parallel with the beam emission surface of the semiconductor laser device and nearly perpendicular to the first axis (Spec., pg. 6, lines 10-24; pg. 7, lines 11-24; pg. 14 line 17 – pg. 15, line 3; pg. 16, line 19 – pg. 17, line 12; FIGS. 7B and 8B),

wherein the laser diode and the grating are arranged so that the laser diode supplies an S wave to the grating (Spec., pg. 7, line 24 – pg. 8, line 1; pg. 19, lines 3-15),

wherein the laser diode has an output power of at least 45 mW (Spec., pg. 7, lines 1-2; pg. 19, line 18 – pg. 20, line 9),

wherein when the laser diode emits a beam with an output power of 45 mW or less, a kink does not occur (Spec., pg. 7, lines 2-4; pg. 20, lines 14 – pg. 23, line 6),

wherein a reflectance of a beam emission surface of the laser diode is 3 % or less (Spec., pg. 7, lines 4-6; pg. 23, line 11 – pg. 24, line 12),

wherein a numerical aperture of the lens is in the range from 0.3 to 0.7 (Spec., pg. 7, lines 6-7; pg. 24, line 13 – pg. 25, line 11),

wherein an external cavity length is in the range from 10 mm to 30 mm (Spec., pg. 7, lines 7-8; pg. 25, line 12 – pg. 26, line 5), and

wherein a reflectance of a first order diffracted beam of the grating is in the range from 10 % to 30 % (Spec., pg. 7, lines 9-11; pg. 26, line 6 – pg. 27, line 1).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

The issues presented for consideration in this appeal, with separate arguments as noted in the following sections, are as follows:

VI.A Whether the Examiner erred in rejecting claims 1, 3-4, and 11 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Pat. No. 4,913,525 to Asakura et al. ("Asakura") in view of U.S. Pat. No. 6,488,419 to Kato et al. ("Kato").

VI.B Whether the Examiner erred in rejecting claims 2 and 7 under 35 U.S.C. § 103(a) as being unpatentable over Asakura in view of Kato, and further in view of U.S. Pat. No. 5,870,417 to Verdiell et al. ("Verdiell").

VI.C Whether the Examiner erred in rejecting claims 5, 6 and 12 under 35 U.S.C. § 103(a) as being unpatentable over Asakura in view of Kato, and further in view of Mizuno et al., "100mW Kink-free Blue-violet Laser Diodes with Low Aspect Ratio," Proceedings of the 11th Sony Research Forum, 2001 ("Mizuno").

VI.D Whether the Examiner erred in rejecting claims 8-10 under 35 U.S.C. § 103(a) as being unpatentable over Asakura in view of Kato, and further in view of U.S. Pat. No. 7,027,469 to Sidorin ("Sidorin").

VI.E Whether the Examiner erred in rejecting claims 13-18 under 35 U.S.C. § 103(a) as being unpatentable over Asakura in view of Kato, Mizuno, Verdiell and Sidorin.

These issues are discussed in the following section.

VII. ARGUMENT

VII.A. Introduction

VII.A.1 Claims 1, 3, 4, and 11

In the Final Office Action of June 4, 2008, the Examiner erred in rejecting claims 1, 3-4, and 11 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Pat. No. 4,913,525 to Asakura et al. ("Asakura") in view of U.S. Pat. No. 6,488,419 to Kato et al. ("Kato").

VII.A.2 Claims 2 and 7

In the Final Office Action of June 4, 2008, the Examiner erred in rejecting claims 2 and 7 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Asakura in view of Kato, and further in view of U.S. Pat. No. 5,870,417 to Verdiell et al. ("Verdiell").

VII.A.3 Claims 5, 6, and 12

In the Final Office Action of June 4, 2008, the Examiner erred in rejecting claims 5, 6 and 12 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Asakura in view of Kato, and further in view of Mizuno et al., "100mW Kink-free Blue-violet Laser Diodes with Low Aspect Ratio," Proceedings of the 11th Sony Research Forum, 2001 ("Mizuno").

VII.A.4 Claims 8-10

In the Final Office Action of June 4, 2008, the Examiner erred in rejecting claims 8-10 under 35 U.S.C. § 103(a) as being unpatentable over Asakura in view of Kato, and further in view of U.S. Pat. No. 7,027,469 to Sidorin ("Sidorin").

VII.A.5 Claims 13-18

In the Final Office Action of June 4, 2008, the Examiner erred in rejecting claims 13-18 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Asakura in view of Kato, Mizuno, Verdiell and Sidorin.

Consistent with the grouping of claims in the following section, these rejections are variously deficient as noted in the separate arguments.

VII.B. The Examiner erred in rejecting claims 1, 3-4, and 11 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Pat. No. 4,913,525 to Asakura et al. ("Asakura") in view of U.S. Pat. No. 6,488,419 to Kato et al. ("Kato").

Asakura discloses a frequency stabilized light source including a semiconductor laser chip, a lens, a finite Fourier diffraction grating and an anti-reflection coating. (Asakura, col. 3, lines 4-6.) "A light beam coming out of one facet of the semiconductor laser chip is collimated by the lens, and it is incident on the Fourier grating." (Asakura, col. 3, lines 6-9, see also Asakura FIG. 4) "The incident light is dispersed depending on its wavelengths, and the light with a specific wavelength determined from the angle of the grating is fed back to the active layer of the semiconductor laser chip." (Asakura, col. 3, lines 9-13.) "The semiconductor laser chip oscillates stably at the wavelength of the feedback light, and emits a frequency stabilized output light from the other facet thereof." (Asakura, col. 3, lines 13-16.) "The output light from the semiconductor laser chip has its wavelength varied by the rotation of the grating." (Asakura, col. 3, lines 16-19.)

The Non-final Office Action of November 16, 2007, makes clear that Asakura fails to disclose or suggest many of the features recited in claim 1, namely:

> *a window glass disposed opposite to a beam emission surface of the semiconductor laser device; ...*
>
> *wherein the window glass is arranged in a first state or a second state,*
>
> *wherein in the first state the window glass is nearly in parallel with a first axis and is not in parallel with a second axis,*
>
> *wherein in the second state the window glass is not in parallel with the first axis, the window glass being nearly in parallel with the second axis, and*
>
> *wherein the first axis is nearly perpendicular to a surface that is in parallel with at least one of the boundary surfaces of the activation layer and other layers of the semiconductor laser device, and the second axis is nearly in parallel with the beam emission surface of the semiconductor laser device and nearly perpendicular to the first axis.* (Non-final Office Action of November 16, 2007, pg. 2, line 20 - pg. 3, line 6.)

Additionally, although Asakura disclosed "[a] light beam coming out of one facet of the semiconductor laser chip [being] collimated by the lens[,] incident on the Fourier grating[,]" "[t]he incident light [being] dispersed depending on its wavelengths, and the light with a specific

wavelength determined from the angle of the grating [being] fed back to the active layer of the semiconductor laser chip" (Asakura, col. 3, lines 6-13.), Asakura makes no mention of "*a grating that receives a beam emitted from the semiconductor laser device through [a] window glass and returns a beam having a predetermined wavelength to the semiconductor laser device*[.]"

The Office Action relies on Kato to cure the deficiencies of Asakura. (Non-final Office Action, pg. 3, lines 7-18.) The Office Action alleges that the hermetic glass 36 in Kato figure 2 is a window in the second state, parallel with the second axis. (Non-final Office Action, pg. 3, lines 16-18.) The Office Action then concludes that "it would have been obvious to one of ordinary skill in the art, at the time the invention was made, to use Kato's window to seal Asakura's laser." (Non-final Office Action, pg. 3, lines 19-20.)

However, as will be shown below, Kato clearly fails to cure the deficiencies of Asakura. Specifically, Kato fails to disclose or suggest "*a window glass disposed opposite to a beam emission surface of the semiconductor laser device; a grating that receives a beam emitted from the semiconductor laser device through the window glass and returns a beam having a predetermined wavelength to the semiconductor laser device*[.]"

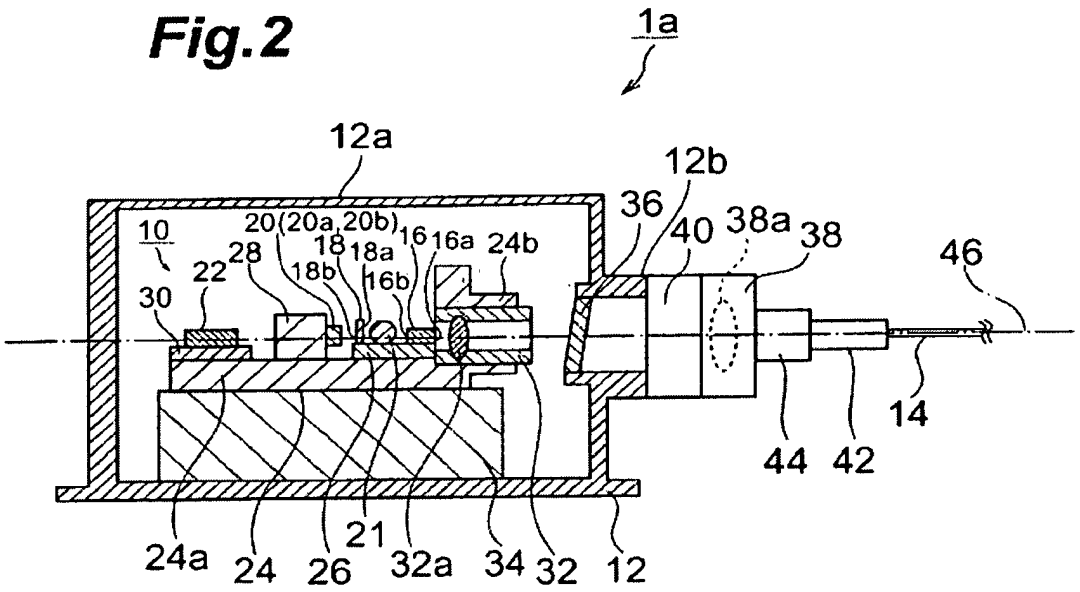
Kato discloses a light emitting module including a semiconductor light emitting device 16, photodetectors 20a, 20b, and an etalon 18. (Kato, Abstract.) The semiconductor 16 has a first light reflecting surface 16b, a second light emitting surface 16a, and an active layer. (Kato, col. 16, lines 13-19.) The active layer is arranged between the light reflecting surface 16b and the light emitting surface 16a. (Kato, col. 8, lines 36-39.)

Photodetectors 20a, 20b are located so as to receive transmitted light from the first light reflecting surface 16b of the semiconductor light emitting device. (Kato, Abstract.) As shown in Kato Fig. 2, reproduced below, the etalon 18 is located between the first light reflecting surface 16b and the photodetector 20a, 20b. (Kato, Abstract.)

Kato discloses that "the optical fiber 14, lenses 32a, 38a, semiconductor laser 16, etalon 18, and photodetectors 20a, 20b are arranged in a direction of a predetermined axis 46 in the semiconductor laser module 1a." (Kato, col. 15, lines 55-59.) The "semiconductor laser module 1a utilizes the output light from the back face of the semiconductor laser 16." (Kato, col. 15, lines 59-

60.) "This output light is spectroscopically split by use of the etalon 18 to obtain a plurality of monitor light including respective wavelength components having a predetermined wavelength spacing in the wavelength spectrum of the semiconductor laser 16." (Kato, col. 15, lines 60-65.)

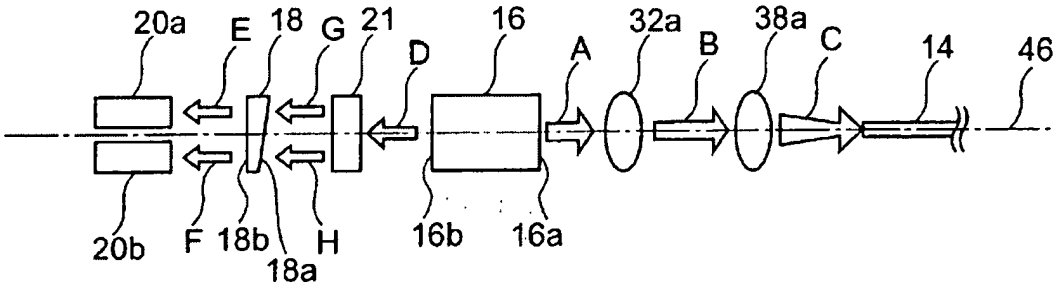
Fig.2



Kato Fig. 12A, reproduced below, describes the propagation of light in the semiconductor laser module 1a. (Kato, col. 16, lines 6-8.) Kato discloses:

> "12A is a schematic view showing the propagation of light in the semiconductor laser module 1a. The optical fiber 14, lens 38a, lens 32a, semiconductor laser 16, etalon 18, optical waveguide circuit 21, and photodetectors 20a, 20b are arranged in turn in a direction of the predetermined axis 46. The light A emits from the light emitting surface 16a of the semiconductor laser 16 and then is converged through the lens 32a toward the lens 38a to form light B. Further, the light B is converged by the lens 38a so as to enter the end face of the optical fiber 14 to form light C. On the other hand, the light D emits the light reflecting surface 16b of the semiconductor laser 16 and is split into light G and light H in the light collimating means 21 such as an optical waveguide circuit and thereafter the light G and H are incident to the input surface 18a of the etalon 18." (Kato, col. 16, lines 8-22.)

Fig. 12A



The only description Kato makes concerning the hermetic glass 36 shown in Kato Figure 2 above is: "[a] wall surface of the package main body 12a has an optical window sealed by hermetic glass 36, in its portion communicating with the cylindrical portion 12b." The hermetic glass 36, as disclosed by Kato, would thus be positioned between lens 32a and lens 38a in Kato Fig. 12A above, and only light B would pass through the hermetic glass 36.

On the other hand, light D which is emitted from the light reflecting surface 16b of the semiconductor 16 passes through collimating means 21 and then to etalon 18 before arriving at photoconductors 20a and 20b as light E and F, respectively. However, Kato makes no mention whatsoever of "*a grating that receives a beam emitted from the semiconductor laser device through [a] window glass and returns a beam having a predetermined wavelength to the semiconductor laser device*," as recited in claim 1.

In the Request for Reconsideration for reconsideration, Applicant stressed that Kato fails to disclose or suggest this specific feature, and by way of explanation, noted:

> The hermetic glass 36, as disclosed by Kato, would thus be positioned between lens 32a and lens 38a in Kato Figure 12A, and only light B passes through the hermetic glass 36. Kato makes no mention of a grating receiving light after it passes through the hermetic glass 36. Furthermore, Kato also makes no mention of light returning to the semiconductor after passing through the hermetic glass 36[.] Request for Reconsideration, pg. 9, lines 16-21.

In the Advisory Action of September 18, 2008, the Examiner, overlooking that Kato failed to disclose "*a grating that receives a beam emitted from the semiconductor laser device through [a] window glass and returns a beam having a predetermined wavelength to the semiconductor laser device*," countered that the feature "a grating receiving light after it passes through the hermitic

class" was not recited in the rejected claim. (Advisory Action of September 18, 2008, pg. 2, lines 5-10.)

Further, in the Advisory Action of September 18, 2008, overlooking the merit of the Applicant's remarks, the Examiner continued stating, "[t]he [A]pplicant argues that the glass must be between the grating and the laser. However, this limitation is not present in the language of claim 1." (Advisory Action of September 18, 2008, pg. 2, lines 11-12.)

This statement shows that the Examiner has failed to understand the features of claim 1 and to ascertain the differences between the prior art and the claim at issue. Claim 1 does not recite, nor does Applicant maintain "that the glass be between the grating and the laser." But, claim 1 recites that the grating receive "*a beam emitted from the semiconductor laser device through the window glass and returns a beam having a predetermined wavelength to the semiconductor laser device*[.]"

In judging the patentability of a claim "all words in [the] claim must be considered[.]" *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970). In failing to consider the words "*through the window glass*" and "*return*," the Examiner has failed to consider all the words in claim 1.

The feature "*a grating that receives a beam emitted from the semiconductor laser device through [a] window glass and returns a beam having a predetermined wavelength to the semiconductor laser device*," is significant and should not be overlooked. It is due to this feature, that the invention is able to increase the output and improve the single mode characteristics of the laser. *See* Spec. pg. 12, line 6 – pg. 13, line 7; pg. 18, lines 5-17; *compare* Applicant Fig. 6 and Applicant Fig. 9.

Because even the combination of Asakura and Kato would still fail to yield the features of Applicant's claimed invention, a prima facie case of obviousness has not been presented for independent claim 1. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974).

Claims 3, 4 and 11 depend from claim 1 and thus incorporate the distinct features recited therein, as well as their separately recited, patentably distinct features.

Accordingly, Appellant respectfully requests reversal of the Examiner's rejection of claims 1, 3-4, and 11 under 35 U.S.C. § 103(a) as being unpatentable over Asakura in view of Kato.

VII.C. The Examiner erred in rejecting claims 2 and 7 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Asakura in view of Kato, and further in view of U.S. Pat. No. 5,870,417 to Verdiell et al. ("Verdiell").

Claims 2 and 7 depend from claim 1 and thus incorporate the features recited therein. As described above, Asakura and Kato fail to disclose these claimed features. Verdiell discloses a thermal compensator for waveguide DBR sources, and is introduced as purportedly disclosing an angle between the surface of the window glass and the second axis in the range of 5-12 degrees. Even assuming, *arguendo*, that these features might be disclosed, there is no disclosure or suggestion of the above-described features regarding claim 1, so the three way combination of references would fail to yield what is claimed therein.

Accordingly, Appellant respectfully requests reversal of the Examiner's rejection of claims 2 and 7 under 35 U.S.C. § 103(a) as being unpatentable over Asakura in view of Kato, and further in view of Verdiell.

VII.D. The Examiner erred in rejecting claims 5, 6, and 12 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Asakura in view of Kato, and further in view of Mizuno et al., "100mW Kink-free Blue-violet Laser Diodes with Low Aspect Ratio," Proceedings of the 11th Sony Research Forum, 2001 ("Mizuno").

Claims 5, 6 and 12 depend directly or indirectly from independent claim 1, and thus incorporate the features recited therein. Asakura and Kato fail to disclose such features as described above. Mizuno is introduced as disclosing a blue laser diode and certain power features, but Mizuno does not address the above-described features of claim 1.

Accordingly, Appellant respectfully requests reversal of the Examiner's rejection of claims 5, 6, and 12 under 35 U.S.C. § 103(a) as being unpatentable over Asakura in view of Kato, and further in view of Mizuno.

VII.E. The Examiner erred in rejecting claims 8-10 under 35 U.S.C. § 103(a) as being unpatentable over Asakura in view of Kato, and further in view of U.S. Pat. No. 7,027,469 to Sidorin ("Sidorin").

Claims 8-10 depend from claim 1 and thus incorporate the features recited therein. As described above, Asakura and Kato fail to disclose these claimed features. Sidorin is introduced for purported disclosures of the additional features recited in claims 8 and 10 regarding cavity length, but does not address and offers no remedy to the deficiencies of Asakura and Kato. Thus even the combination of Asakura, Kato and Sidorin would still fail to yield the features of Applicant's claim 1, let alone dependent claims 8-10.

Accordingly, Appellant respectfully requests reversal of the Examiner's rejection of claims 8-10 under 35 U.S.C. § 103(a) as being unpatentable over Asakura in view of Kato, and further in view of Sidorin.

VII.F. The Examiner erred in rejecting claims 13-18 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Asakura in view of Kato, Mizuno, Verdiell and Sidorin.

For reasons similar to those provided regarding claim 1 above, claim 13 is neither disclosed nor suggested by Asakura in view of Kato. Nor do Mizuno, Verdiell, or Sidorin remedy these deficiencies. Accordingly, a prima facie case of obviousness has not been presented regarding claim 13. Claims 14-18 depend from claim 13 and thus incorporate the features recited therein. These claims are thus also distinct for their incorporation of the features in the independent claim as well as for their separately recited patentably distinct features.

Accordingly, Appellant respectfully requests reversal of the Examiner's rejection of claims 13-18 under 35 U.S.C. § 103(a) as being unpatentable over Asakura in view of Kato, Mizuno, Verdiell and Sidorin.

VIII. CLAIMS

A copy of the claims involved in the present appeal is attached hereto as Appendix A.

IX. EVIDENCE

No evidence pursuant to §§ 1.130, 1.131, or 1.132, or additional evidence entered by or relied upon by the Examiner is being submitted.

X. RELATED PROCEEDINGS

No related proceedings are referenced in section II above, or copies of decisions in related proceedings are not provided.

XI. CONCLUSION

For the reasons stated above, claims 1-18 are considered allowable. Reversal of the Examiner's decision is respectfully requested.

Dated: April 6, 2009

Respectfully submitted,

By _____ 40,290

Ronald P. Kananen
Registration No.: 24,104
Christopher M. Tobin
Registration No.: 40,290
RADER, FISHMAN & GRAUER PLLC
Correspondence Customer Number: 23353
Attorneys for Appellant

APPENDIX A - CLAIMS

1. An external cavity type semiconductor laser, comprising:

a semiconductor laser device having a plurality of layers including an activation layer;

a window glass disposed opposite to a beam emission surface of the semiconductor laser device;

a grating that receives a beam emitted from the semiconductor laser device through the window glass and returns a beam having a predetermined wavelength to the semiconductor laser device; and

a lens disposed between the semiconductor laser device and the grating and which collects the beam emitted from the semiconductor laser device,

wherein the window glass is arranged in a first state or a second state,

wherein in the first state the window glass is nearly in parallel with a first axis and is not in parallel with a second axis,

wherein in the second state the window glass is not in parallel with the first axis, the window glass being nearly in parallel with the second axis, and

wherein the first axis is nearly perpendicular to a surface that is in parallel with at least one of the boundary surfaces of the activation layer and other layers of the semiconductor laser device, and the second axis is nearly in parallel with the beam emission surface of the semiconductor laser device and nearly perpendicular to the first axis.

2. The external cavity type semiconductor laser as set forth in claim 1,

wherein the window glass is arranged in the first state, and

wherein an angle between a surface of the window glass and the second axis is in the range from 5° to 12°.

3. The external cavity type semiconductor laser as set forth in claim 1,

wherein the window glass is arranged in the second state, and

wherein the angle between the surface of the window glass and the first axis is in the range from 1° to 1.6°.

4. The external cavity type semiconductor laser as set forth in claim 1,

wherein the semiconductor laser device and the grating are arranged so that the semiconductor laser device supplies an S wave to the grating.

5. The external cavity type semiconductor laser as set forth in claim 1,

wherein the semiconductor laser device has an output power of at least 45 mW, and

wherein when the semiconductor laser device emits a beam with an output power of 45 mW or less, a kink does not occur.

6. The external cavity type semiconductor laser as set forth in claim 5,

wherein the semiconductor laser device is a laser diode,

wherein side surfaces of a ridge of the laser diode are buried with two layers of an insulation film to suppress the kink and a stripe width W is 1.6 μm or less.

7. The external cavity type semiconductor laser as set forth in claim 1,

wherein the semiconductor laser device is a laser diode, and

wherein a reflectance of a beam emission surface of the laser diode is 3 % or less.

8. The external cavity type semiconductor laser as set forth in claim 1,

wherein a numerical aperture of the lens is in the range from 0.3 to 0.7.

9. The external cavity type semiconductor laser as set forth in claim 1,

wherein an external cavity length is in the range from 10 mm to 30 mm.

10. The external cavity type semiconductor laser as set forth in claim 9,

wherein the external cavity length is in the range from 10 mm to 20 mm.

11. The external cavity type semiconductor laser as set forth in claim 1,

wherein a reflectance of a first order diffracted beam of the grating is in the range from 10 % to 30 %.

12. The external cavity type semiconductor laser as set forth in claim 1,

wherein the semiconductor laser device is a blue laser diode.

13. An external cavity type semiconductor laser, comprising:

a laser diode having a plurality of layers including an activation layer;

a window glass disposed opposite to a beam emission surface of the laser diode;

a grating that receives a beam emitted from the laser diode through the window glass and returns a beam having a predetermined wavelength to the laser diode; and

a lens disposed between the laser diode and the grating and collects the beam emitted from the laser diode,

wherein the window glass is arranged in a first state or a second state,

wherein in the first state the window glass is nearly in parallel with a first axis and is not in parallel with a second axis,

wherein in the second state the window glass is not in parallel with the first axis, the window glass being nearly in parallel with the second axis,

wherein the first axis is nearly perpendicular to a surface that is in parallel with at least one of the boundary surfaces of the activation layer and other layers of the semiconductor laser device, and the second axis is nearly in parallel with the beam emission surface of the semiconductor laser device and nearly perpendicular to the first axis,

wherein the laser diode and the grating are arranged so that the laser diode supplies an S wave to the grating,

wherein the laser diode has an output power of at least 45 mW,

wherein when the laser diode emits a beam with an output power of 45 mW or less, a kink does not occur,

wherein a reflectance of a beam emission surface of the laser diode is 3 % or less,

wherein a numerical aperture of the lens is in the range from 0.3 to 0.7,

wherein an external cavity length is in the range from 10 mm to 30 mm, and

wherein a reflectance of a first order diffracted beam of the grating is in the range from 10 % to 30 %.

14. The external cavity type semiconductor laser as set forth in claim 13,

wherein the laser diode is a blue laser diode.

15. The external cavity type semiconductor laser as set forth in claim 13,

wherein the window glass is arranged in the first state, and

wherein an angle between a surface of the window glass and the second axis is in the range from 5° to 12°.

16. The external cavity type semiconductor laser as set forth in claim 13,

wherein the window glass is arranged in the second state, and

wherein the angle between the surface of the window glass and the first axis is in the range from 1° to 1.6°.

17. The external cavity type semiconductor laser as set forth in claim 13,

wherein side surfaces of a ridge of the laser diode are buried with two layers of an insulation film to suppress the kink and a stripe width W is 1.6 μm or less.

18. The external cavity type semiconductor laser as set forth in claim 13,

wherein the external cavity length is in the range from 10 mm to 20 mm.

APPENDIX B – ADDITIONAL EVIDENCE

None.

APPENDIX C – RELATED PROCEEDINGS

None.